LANL to play key role in biofuel development

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Laboratory among consortium members receiving ARRA funds

LOS ALAMOS, New Mexico, January 14, 2010—Los Alamos National Laboratory will play a key role in helping develop advanced biofuels for transportation, thanks to funding from the American Reinvestment and Recovery Act (ARRA).

As a partner in two separate funding awards announced this week by Energy Secretary Steven Chu, LANL will partner with businesses, nonprofit organizations, universities, and other national laboratories to create a proof-of-concept system for commercializing algae-based biofuels or other advanced biofuels that can be transported and sold using the nation's existing fueling infrastructure. Under the two ARRA proposals, two separate consortia will develop "green" fuels such as gasoline, diesel, or jet fuel from algae and other renewable feedstocks. LANL will be awarded some $12 million from both projects.

The first ARRA project awarded $44 million to the National Alliance for Advanced Biofuels and Bioproducts (NAABB) and will be led by the Donald Danforth Plant Science Center. Specifically, the project will develop and demonstrate the science and technology necessary to significantly increase production of algal biomass and lipids, efficiently harvest and extract algae and algal products, and establish valuable certified coproducts that scale with renewable fuel production.

Coproducts include animal feed, industrial feedstocks, and additional energy generation. Multiple test sites will cover diverse environmental regions to facilitate broad deployment.

The second ARRA project awards $34 million to the National Advanced Biofuels Consortium and will be led by the National Renewable Energy Laboratory (NREL) and Pacific Northwest National Laboratory (PNNL). The NABC initiative will conduct cutting-edge research to develop infrastructure compatible, biomass-based hydrocarbon fuels. The result will be a sustainable, cost-effective production process that maximizes the use of existing refining and distribution infrastructure. NABC will investigate a variety of process strategies and select those closest to larger-scale demonstration. The NABC plans to further develop these strategies to deliver a pilot-ready process, with full lifecycle analysis to measure the environmental benefits.

Among other activities in its approximately $12 million of work on both projects, Los Alamos researchers will enhance techniques for harvesting and concentrating lipids from algae in an energy-efficient, environmentally friendly manner using the Los Alamos Acoustic Flow Cytometer, a 2007 R&D 100 Award-winning technology. Los Alamos researchers will also capitalize on the Laboratory’s chemistry expertise to design or use unique catalysts to selectively and effectively slice through chemical bonds in biomass materials to extract the energy-rich portions of those materials in a safe, cost-effective manner. Laboratory researchers also will work within the consortium to develop processes for minimizing water use, or for efficiently reusing water from biofuel growth and extraction processes. José Olivares, deputy leader of LANL’s Biosciences Division, will serve as the executive director for the NAABB initiative, and David Hadley of LANL’s Technology Transfer Division will manage industry partnerships for the initiative.

"These awards greatly demonstrate the promise that biofuels potentially hold for the nation’s transportation sector," said Olivares. "It is extremely gratifying to be working in partnership with such a talented and diverse group of entities on this project, and it is very satisfying to see Los Alamos National Laboratory being recognized as a national resource for alternative fuels research."

Award partners in the NAABB initiative include: The Donald Danforth Plant Science Center; LANL; PNNL; University of Arizona; Brooklyn College, Colorado State University; New Mexico State University; Texas Agrilife Research, Texas A&M University system; University of California-Los Angeles; University of California-San Diego; University of Washington; Washington University, St. Louis; Washington State University; AXI; Catilin; Diversified Energy; Eldorado Biofuels; Genifuel; HR BioPetroleum; Inventure; Kai BioEnergy; Palmer Labs; Solix Biofuels; Targeted Growth; Terrabon; UOP LLC.

Award partners in the NABC initiative include: NREL; PNNL; Albemarle Corp.; Amyris Biotechnologies; Argonne National Laboratory; BP Products North America Inc.; Catchlight Energy LLC; Colorado School of Mines; Iowa State University; LANL; Pall

Corp.; RTI International; Tesoro Companies Inc.; University of California-Davis; UOP LLC; Virent Energy Systems; Washington State University.